

REMARKS

The Examiner is thanked for the comments in the Action. They have helped us considerably in understanding her rationale therein and in drafting this Response thereto.

It is our understanding that claims 1-60 remain pending in this application. Claims 1, 18, 32-35, and 49 have been amended for reasons specifically remarked upon, below. And claims 7, 9, 10, 24, 26, 27, 40, 41, 54 and 55 have been acknowledged by the Examiner as being directed to allowable subject matter.

Item 1 (§103 rejections in view of Grann):

Claims 1-6, 8, 11-23, 25, 28-39, 42-53 and 56-60 have been rejected as unpatentable (obvious) over Grann. The language in this new Action appears to be word-for-word the same as the language in the Action dated 03/19/2003. In response to this new Action, Applicant incorporates by reference its remarks in its prior Response dated 06/17/2003 and adds additional remarks under Item 3, below.

Item 2 (Allowable Subject Matter):

Claims 7, 9, 10, 24, 26, 27, 40, 41, 54 and 55 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. We thank the Examiner for this indication.

Item 3 (Response to Arguments):

We thank the Examiner for considering our prior remarks, and we regret that there still is confusion. In view of this we urge that it is most productive now to focus on the points the Examiner has commented on here.

The Examiner's first comment addresses the §103 rejections over Grann and the meaning of “*multi-dimensional grating*” in the present claims, wherein the Action states:

Examiner disagrees that the phrase 'optically multi-dimensional grating' clearly distinguishes over the gratings of the present art. The gratings disclosed in Figure 3 of Grann et al. receive a light beam (λ l, for example) in one direction and diffracts that light beam in a second, orthogonal direction. Thus, the grating disclosed by Grann et al. is optically multi-dimensional. In fact, diffraction gratings inherently diffract light in two dimensions.

In response to applicant's argument that the prior art fails to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the specific structure or physical characteristics of planar and/or cubical gratings as defined in the specification, meaning the cell-to-cell spacings and the surface-to-surface spacings that are controlled in two or more physical dimensions), are not recited in the rejected claim(s).

Taking the last paragraph first, Applicant has herein amended the claims to recite that the optically multi-dimensional gratings include “*a grid of cells having at least one set of inter-cell surface-to-surface separations and at least one set of intra-cell cell-to-cell separations*”.

Accordingly, the features upon which Applicant relies are now explicitly recited in the claims.

And now taking the first paragraph, we urge that the Examiner has confused the result with the means to the result. The gratings of Grann bend light so that it travels in two-physical dimensions, but these gratings are optically operational in only one-dimension – specifically its intra-groove groove-to-groove spacing. Grann teaches or reasonably suggests using just a single set of intra-cell cell-to-cell separations in each filter in its filter array, and therefore is clearly avoided by the present invention that uses multiple and/or other separations.

Continuing, the Action states “*The specification discusses the physical structure of the gratings illustrated in Figure 12 and Figure 13, but does not clearly define special definitions of either the term “planar grating” or the term “cubical grating”*”. Respectfully, this is incorrect. Definitions of these terms that one of ordinary skill in the art would understand are provided starting at page 20, line 25 in the specification, discussing FIG. 12-13.

The Examiner's second comment addresses our rationale that “*Grann teaches a plurality of one-dimensional grating filters that operate in one optical dimension.*” The Action here states “*The plurality of gratings (10a, 10b... 10n) disclosed in Figure 3 of Grann et al. are optically multi-dimensional because each planar grating receives a light beam in one direction and diffracts that light beam in a second, orthogonal direction.*” This was largely rebutted above, where we remarked that the result was being confused with the means to the result. The gratings of Grann cause light to travel in two-physical dimensions, but are optically operational in only one intra-groove groove-to-groove separation dimension.

The Examiner's third comment addresses our rationale that Grann works sequentially rather than concurrently. This is clearly misunderstood. For example, using FIG. 3, look at the lengths of the paths $\lambda 1$ and $\lambda 5$ follow. When de-multiplexing, the beam travels to filter 10a, where $\lambda 1$ is separated out; the beam then travels to filter 10b, where $\lambda 2$ is separated out; then to

filter 10c, where $\lambda 3$ is separated out; etc. When multiplexing, $\lambda 5$ travels to filter 10e, where it is then re-directed onward to filter 10d; $\lambda 4$ travels to filter 10e, where it is merged with $\lambda 5$ and $\lambda 4$, $\lambda 5$ are then directed onward to filter 10c; etc. Since the filters are physically separated along the distal path traveled by the beam/beams and the speed of light is not instantanous, Grann clearly works sequentially.

The Examiner's fourth comment addresses our concern that:

... the Office action mailed March 19, 2003 does not address the limitations of claims 5, 6 and 39 at all.

Regarding claims 5 and 39; a plurality of wavelengths is a range of wavelengths. On page 4 of the Office action mailed March 19, 2003, it is stated that, "the multi dimensional grating has characteristics suitable for diffracting a plurality of wavelengths concurrently" and on page 5 of the Office action it is stated that, "light sources that produce either single or multiple wavelengths are well known... one of ordinary skill in the art would have found it obvious to use either multiple or single light sources to generate the multiple light signals". Light sources that produce multiple wavelengths inherently produce a range of wavelengths and since the multi-dimensional grating diffracts a plurality of wavelengths, it inherently diffracts a range of wavelengths. Thus, the limitations of claims 5 and 39 were addressed.

Regarding claim 6; on page 4 of the Office action mailed March 19, 2003, it is stated that, "wherein the multi-dimensional grating is a cubical grating formed by an array of planar gratings (10a, 10b, 10c, 10d, 10e)", thus addressing the limitation that a planar grating is disclosed.

The assertion that "*a plurality of wavelengths is a range of wavelengths*" is wrong. Applicant's claims 4 and 38 address pluralities of discrete wavelengths whereas claims 5 and 39 address continuous ranges of wavelengths. Any other interpretation would be redundant. As regards claim 6, we have extensively argued that an array of discret filters (10a-10e) is not a cubical grating. Additionally, if for no other reason than that claim 6 depends from claim 1 and claim 1 has been amended to further avoid Grann, claim 6 should now be allowable.

The Examiner's fifth comment states:

claim 8 recites a cubical grating and not how it is formed, while the Office action states, "wherein the multi-dimensional grating is a cubical grating formed by an array of planar gratings".

The planar gratings (10a, 10b, 10c, 10d and 10e) in Figure 3 of Grann et al. are arranged to form a cubical grating or cubical gratings. Therefore, a cubical grating is disclosed by Grann et al. and that grating is optically active in multiple dimensions as discussed in detail above with respect to Applicant's first argument.

The Examiner is correct “*claim 8 recites a cubical grating and not how it is formed*”, but overlooks that a cubical grating is defined starting at page 20, line 25 in the specification, that definition incorporates aspects of how a cubical grating is formed, and from this (and FIG. 12-13) it would be clear to one of ordinary skill in the art that Applicant’s singular grid/lattice of cells could not be constructed from plural planar or plural optically one-dimensional gratings. A plurality of Applicant’s planar and/or cubical gratings can be arranged to form a grating block. We have also extensively argued this point before.

The Examiner’s sixth comment states: “*Applicant sixth states that Grann does not teach or reasonably suggest any use for a plurality of its simple blocks*” but overlooks our statement that Grann’s “*arrangement could not achieve, for instance, wavelength ‘combing’*” which the blocks Applicant’s claims can.

The Action here goes on to state “*Therefore, the multi-dimensional grating disclosed in Figure 3 of Grann et al. may be thought of as being comprised of several blocks, wherein each block includes at least one of the planar gratings.*” Respectfully, what does Grann teach or reasonably suggest? We now have one argument that the “*filter array*” in FIG. 3 of Grann is a single filter device equivalent to Applicant’s cubical and planar gratings, and we have a conflicting argument that the “*filter array*” in FIG. 3 of Grann is a multiple filter device equivalent to Applicant’s grating blocks.

While argumentative zeal can be commendable when an examiner is protecting the greater good of the public and the reputation of the Office, we urge that much of the argument Applicant is now having to respond to is improper. Claims language should be interpreted according to its plain meaning to those of ordinary skill in the art, and then according to how one of ordinary skill in the art would interpret the language based on the disclosure. In the present case, we respectfully ask the Examiner to ask herself what would one of ordinary skill in the art understand the disclosed and claimed inventions here to be? We feel that the Examiner has constructed strained logical arguments in the abstract (and illogical ones like “*a plurality of wavelengths is a range of wavelengths*”), and not applied a “*meaning to those of ordinary skill in the art*” standard in this prosecution.

Item 4 (Other items in the Action, e.g., IDS entry, conclusion etc):

These appear informational in nature and are understood to require no reply.

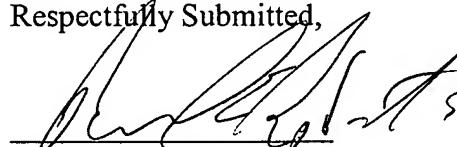
CONCLUSION

Applicant has endeavored to put this case into complete condition for allowance. It is thought that the §103 rejections have been addressed by amendment or have been completely rebutted. Applicant therefore asks that all objections and rejections now be withdrawn and that allowance of all claims presently in the case be granted.

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